

## IXO: The Instrument Complement

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### Abstract

The International X-ray Observatory (IXO) has been created as a mission concept by a joint team of NASA, ESA and JAXA scientists, based on the previous Constellation-X and XEUS concepts. The IXO instrument complement includes a Wide Field X-ray Imager, an X-ray Calorimeter, an X-ray Grating Spectrometer, a Hard X-ray Imager, an X-ray Polarimeter, and a High Time Resolution Detector.

We present the current status of the IXO instrument complement and offer the opportunity for discussion of ideas relevant to the IXO mission concept process.

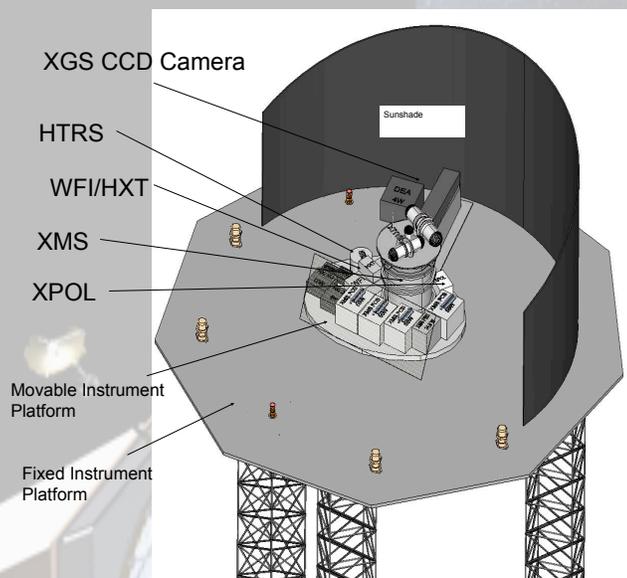
### Instrument Working Group Members

ESA Members: Piet de Korte (Co-Chair)  
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IXO Instrument Accommodation Plan

### IXO Advisory Structure



### IXO Instrument Working Group

#### Charter:

1. Provide a forum for the agencies to inform potential instrument providers with information pertaining to IXO.
2. Produce the Payload Definition Document that describes the IXO straw man payload.
3. Perform the instrument activities necessary to complement the agency led study activities.

### Strawman Instruments

#### Wide Field X-ray Imager (WFI):

- Silicon active pixel sensor
- field of view: 18 arcmin
- energy range: 0.1 to 15 keV
- energy resolution: < 150 eV @ 6 keV
- count rate capability: 8 kcps (< 1% pileup)

#### X-ray Calorimeter (XMS):

- Central, core array: Individual TESs
- 42 x 42 array with 2.9 arc sec pixels
- 5 x 5 arcmin FOV
- 2.5 eV resolution (FWHM) over inner 2.5 x 2.5 arcmin
- ~ 300 µsec time constant

#### X-ray Grating Spectrometer (XGS):

- Spectral resolution >3000
- Two grating technologies are under study:
  - Critical Angle Transmission (CAT) grating
  - Off-plane reflection Grating Spectrometer (OGS)

#### CCD detectors:

- Back-illuminated (high QE below 1 keV),
- Fast readout with thin optical blocking filters

#### Hard X-ray Imager (HXI):

- Cd(Zn)Te pixel array located behind WFI
- energy range extension to 40 keV
- field of view: 8 arcmin

#### High Time Resolution Spectrometer (HTRS):

- Non-imaging array of Silicon Strip Detectors
- 1 Crab source with >90% throughput
- 10 µsec time resolution
- Delta E < 150 eV at 6 keV

#### X-ray Polarization Instrument (XPOL)

- Imaging pixel gas detector
- 1% Mean Depth of Polarization for 1 mCrab source in 100 ksec (3σ)
- E/Delta E = 5 at 6 keV

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